

# Work Order ID 54802

December 22, 2009 1:24:36 PM



Page 1

Item ID: D3676-1

Accept



Setup Start



Revision ID:

Stop



Item Name: BUBBLE WINDOW

Start Date: 1/04/10 Start Qty: 4.00



Cust Item ID:

Required Date: 1/15/10 Req'd Qty: 4.00



Customer:

Reference:

Approvals: Process Plan: CL

Date: 09/12/23 Tooling:

Date:

Run Start



QC:

Date:

SPC (Y/N):

Date:

Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	----------------	--------------	--------------	---------------	---------------	------------------	----------------

Draw Nbr	Revision Nbr
----------	--------------

D3676	Rev B
-------	-------

100

0.00



HAND FINISHING THERMOFORMING

Thermoform

Memo

0.00

Thermoforming Machine

Set up Machine as per folio FTA 018 and D3676 program

BB 10/01/05  
BB X7 SCRAP  
10/01/07  
(X4)

110

0.00



HAND FINISHING THERMOFORMING

Thermoform

Memo

0.00

Thermoforming Machine

Cut Blanks to 30" by 48"

33 1/2 x 50" x 3 pc  
36" x 52" x 4 pc.

BB 10/01/05  
10/01/05 (X7)  
X7 SCRAP  
PTO  
10/01/07  
(X4)

120

0.00



THERMOFORMING MACHINE

Thermoform

Memo

0.00

Thermoforming Machine

Thermoform as per Dwg. D3676 and Folio FTA 018 Dwg. Rev.

3 Folio Rev. C

BB 10/01/07 x4  
10/01/05 X7  
PTO SCRAP.

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval. QC Inspector

Part No: D3676-1 PAR #: \_\_\_\_\_ Fault Category: Thermofuming NCR: (Yes) No DQA: TS Date: 1003.04  
 Resolution: Scrap Disposition: Scrap QA: N/C Closed: TS Date: 10/03/04

NCR: <u>54802</u>		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			
10-01-05	120	7 bubble windows scrap. Windows kept pulling out the clamps when the material was being vacuumed. Follow same process was being followed. R.C. process.	<u>TS/412</u>	<ul style="list-style-type: none"> <li>Scrap all windows. No more material to replace.</li> <li>Vacuum process was reversed Ex: Mild/Soft vacuum → hard suction.</li> <li>and 1 window formed correctly, but is scrap because it was heated twice. Air bubbles were visible.</li> </ul>	10/01/05 <u>TS</u>	<u>S</u> 10/02/05	<u>TS/412</u>	<u>08-01-05</u>

NOTE: Date & initial all entries

**Work Order ID 54802**

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Item ID: D3676-1

Accept



Setup Start



Revision ID:

Stop



Item Name: BUBBLE WINDOW

Start Date: 1/04/10

Start Qty: 4.00



Cust Item ID:

Required Date: 1/15/10

Req'd Qty: 4.00



Customer:

Reference:

Run Start



Approvals:

Process Plan:

Date:

Tooling:

Date:

Stop



QC:

Date:

SPC (Y/N):

Date:

Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run HoursDraw  
NumberDraw  
Rev.Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

130

QC2- Inspect parts off machine FAI/FAIB

0.00



QC

Memo

0.00

Quality Control

1) Check Surface finish for undesired marks, voids, dimples etc. 2) Check depth of bubble to ensure conformity to drawing tolerances.

Wh 10/01/07 (X4)

140

QC8- Inspect parts - second check

0.00



QC

Memo

0.00

Quality Control

BB  
10/01/07  
(X4)

150

HAND FINISHING THERMOFORMING

0.00



Thermoform

Memo

0.00

Thermoforming Machine

1) Trim off excess flange material 2) Buff out any light scratches or blemishes 3) Etch part number and batch number

10/01/21 Wh  
(X4)

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

**Work Order ID 54802**

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Item ID: D3676-1

Accept

Setup Start

Revision ID:

Stop

Item Name: BUBBLE WINDOW

Start Date: 1/04/10 Start Qty: 4.00

Cust Item ID:

Required Date: 1/15/10 Req'd Qty: 4.00

Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start

QC:

Date:

SPC (Y/N):

Date:

Stop

Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run HoursDraw  
NumberDraw  
Rev.Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

160

QC2- Inspect parts off machine FAI/FAIB

0.00



QC

Memo

0.00

Quality Control

10/01/21 DL  
(X3)  
PTO

170

QC5- Inspect part completeness to step on W/O

0.00



QC

Memo

0.00

Quality Control

8/10/02/23

(A3)

4

180

Identify as per dwg &amp; Stock Location:

0.00



Packaging

Memo

0.00

Packaging




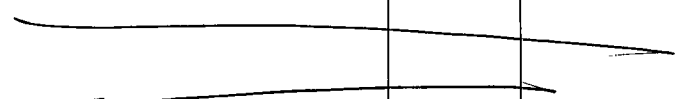

PPN  
SYMS

10/01/21 (3)

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			
10/01/21	160.	GLOVE FELL INTO WINDOW WHILE THERMOFORMING. TRIED TO POLISHOUT DIST. NOT GOOD RESULTS.		SCRAP 1 WINDOW. NO-REPLACE.	10/01/21 W/S	S 10/02/23		S 10/02/23
		R.C. <del>had</del> harriny to take it out of machine.						S 10/02/23

NOTE: Date & initial all entries

# Work Order ID 54802

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Item ID: D3676-1

Accept



Setup Start



Revision ID:

Stop



Item Name: BUBBLE WINDOW

Start Date: 1/04/10 Start Qty: 4.00



Cust Item ID:

Required Date: 1/15/10 Req'd Qty: 4.00



Customer:

Reference:

Run Start



Approvals:

Process Plan:

Date:

Tooling:

Date:

Stop



QC:

Date:

SPC (Y/N):

Date:

Sequence ID/  
Work Center ID

Operation  
Description

Set Up/  
Run Hours

Draw  
Number

Draw  
Rev.

Plan  
Code

Accept  
Qty

Reject  
Qty

Reject  
Number

Insp.  
Stamp

190

QC21- Final Inspection - Work Order Release

0.00



QC

Memo

0.00

Quality Control

10/03/02 *[Signature]*

PL 10-2-24

(3)

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries



# Picklist Print

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Page 1  
1

Work Order ID: 54802



Parent Item: D3676-1



Parent Item Name: BUBBLE WINDOW

Start Date: 1/04/10

Required Date: 1/15/10

Comments:

Start Qty: 4.00

Required Qty: 4.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
MACRLICS.236		Purchased	No				sf	183.0000	52.0260			



Plexiglass G .236"



Warehouse  
Location

Loc Qty

Loc Code

Main Warehouse

MAT

183

107871

22

110577

161

M 113571

3pc  
4pc  
4pc

10/01/04  
10/01/05  
10/01/07

~~38~~  
~~38~~  
38

39  
52  
52

13.00

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

# 1.

DART AEROSPACE LTD		Work Order: 54802
Description:		Part Number: D35076-1
Inspection Dwg:	Rev:	Page 1 of 1

### FIRST ARTICLE INSPECTION CHECKLIST

☒ First Article ☐ Prototype

### THERMOFORMING SECTION

Description	Accept	Reject	Method of Inspection	Comments
Inside Radii less than "	✓			
Shape Definition	✓			
Texture Retention	✓			
Material imperfections such as bumps, cracks, voids, scratching	✓			

Measured by: DL

Date: 10/01/05

### TRIMMING SECTION

Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
46.0"	+/- .100	46.1"	✓			
29.1"	+/- .100	29.1"	✓			
17.0"	+/- .125"	16.9"	✓			
0.050"	MIN	0.074"				
0.070"	MIN	0.149"				
0.090"	MIN	0.140				

Measured by: DL

Date: 10/01/21

Audited by: S

Date: 10/02/23

Prototype Approval:

Date:

Rev	Date	Change	Revised by	Approved
A		New Issue	KJ/DL	

#2

DART AEROSPACE LTD		Work Order: 54802
Description:		Part Number: 53676-1
Inspection Dwg:	Rev:	Page 1 of 1

### FIRST ARTICLE INSPECTION CHECKLIST

☒ First Article ☐ Prototype

### THERMOFORMING SECTION

Description	Accept	Reject	Method of Inspection	Comments
Inside Radii less than _____"	✓			
Shape Definition	✓			
Texture Retention	✓			
Material imperfections such as bumps, cracks, voids, scratching	✓			

Measured by: <i>Whe</i>	Date: 10/01/05
-------------------------	----------------

### TRIMMING SECTION

Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
46.0"	± .100"	46.0	✓			
29.1"	± .100"	29.1	✓			
17.00	± .25"	16.7"	✓			
0.050"	MIN	0.073"	✓			
0.070"	MIN	0.106	✓			
0.090"	MIN	0.112	✓			

Measured by: <i>Whe</i>	Date: 10/01/21
Audited by: <i>S</i>	Date: 10/02/23
Prototype Approval:	Date:

Rev	Date	Change	Revised by	Approved
A		New Issue	KJ/DL	

43

DART AEROSPACE LTD		Work Order: 54802
Description:		Part Number: D3676-1
Inspection Dwg:	Rev:	Page 1 of 1

### FIRST ARTICLE INSPECTION CHECKLIST

☒ First Article ☐ Prototype

### THERMOFORMING SECTION

Description	Accept	Reject	Method of Inspection	Comments
Inside Radii less than _____"	✓			
Shape Definition	✓			
Texture Retention	✓			
Material imperfections such as bumps, cracks, voids, scratching	✓			

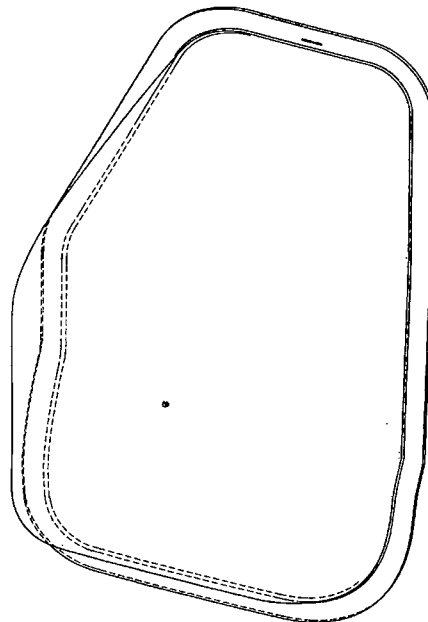
Measured by: <i>DL</i>	Date: 10/01/05
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### TRIMMING SECTION

Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
46.0"	$\pm .100$	46.8"	✓			
29.1	$\pm .100$	29.1"	✓			
17.0"	$\pm .125$	16.25"	✓			
0.050"	M.I.W	0.074"	✓			
0.070"	M.I.W	0.100"	✓			
0.090"	M.I.W	0.110"	✓			

Measured by: <i>DL</i>	Date: 10/01/21
Audited by: <i>S</i>	Date: 10/02/23
Prototype Approval:	Date:

Rev	Date	Change	Revised by	Approved
A		New Issue	KJ/DL	



**D3676-1 412 BUBBLE WINDOW**

**NOTES:**

- 1) MATERIAL: PLEXIGLAS G CLEAR CAST ACRYLIC SHEET PER LP-391 TYPE 1 GRADE C  
OR POLYCAST II CLEAR ACRYLIC SHEET PER MIL-P-5425,  
0.236 THICK (STOCK REF. DART SPEC. M-ACRYLIC-S.236)
- 2) FINISH: NONE
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.010 TO 0.020 MAX
- 6) IDENTIFICATION: ENGRAVE P/N "D3676-1" & B/N "BXXXXX" ON FLANGE WITHIN 0.25" OF BUBBLE.  
USE 0.125" LETTERS TO MAX. DEPTH OF 0.005"
- 7) WEIGHT: 11.0 lbs
- 8) VACUUM FORM PER FOLIO FTA018 USING DT8992 MOLD AND DART QSI 022

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WORK ORDER  
NO. 54802

C209/12123

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09/04/2011

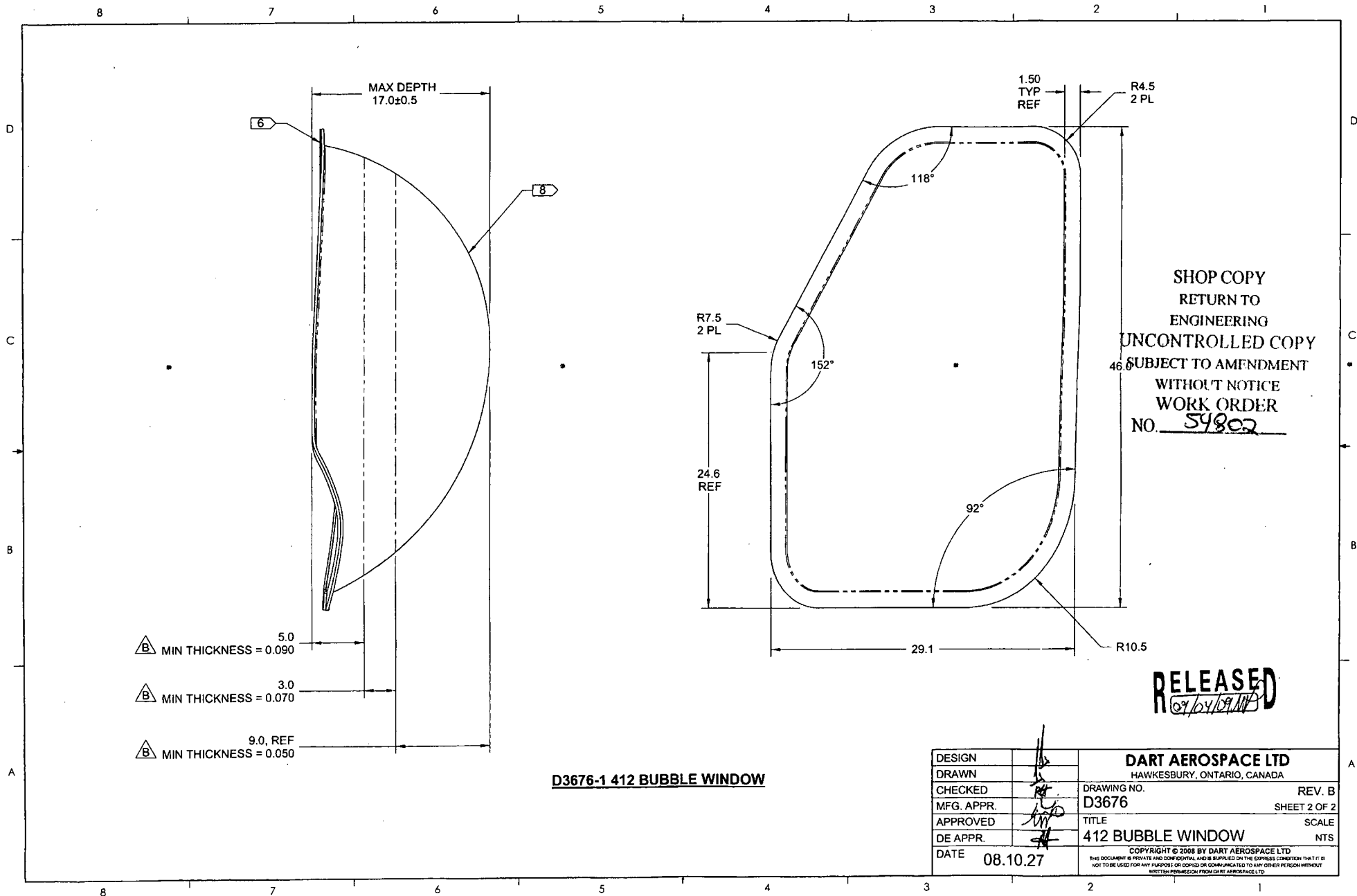
B	REVISED TOLERANCE ON MINIMUM THICKNESSES (ZN A8/B8-2) REASON: PRODUCTION FACILITY.	MB	08.10.27
A	NEW ISSUE	MB	08.02.29
REV.	DESCRIPTION	BY	DATE
DESIGN			
DRAWN			
CHECKED			
MFG. APPR.			
APPROVED			
DE APPR.			
DATE	08.10.27		

**DART AEROSPACE LTD**  
HAWKESBURY, ONTARIO, CANADA

DRAWING NO. **D3676** REV. B  
SHEET 1 OF 2

TITLE **412 BUBBLE WINDOW** SCALE  
NTS

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WORK ORDER  
NO. 54802

RELEASED  
07/04/09

**D3676-1 412 BUBBLE WINDOW**

DESIGN		<b>DART AEROSPACE LTD</b>	
DRAWN		HAWKESBURY, ONTARIO, CANADA	
CHECKED		DRAWING NO. <b>D3676</b>	REV. B
MFG. APPR.			SHEET 2 OF 2
APPROVED		TITLE <b>412 BUBBLE WINDOW</b>	SCALE NTS
DE APPR.			
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